

An aerial photograph of a modern, illuminated building at dusk. The building features a wavy, white roof with several large, circular skylights that are glowing from within. The building's facade is also illuminated, showing a grid of windows. In the background, there are mountains and a body of water under a twilight sky. A construction crane is visible on the right side of the image.

China Hardware Innovation Camp

1st milestone – March 13 2015

1st milestone

dory

Structure

- Problem statement
- Business Model and Value Proposition Canvas
- Validation/invalidation of interviews
- Exploratory sketches
- Hardware solutions (mechanical)
- Block diagram
- Components and electronic modules
- Software solutions (libraries – API)
- Material solutions

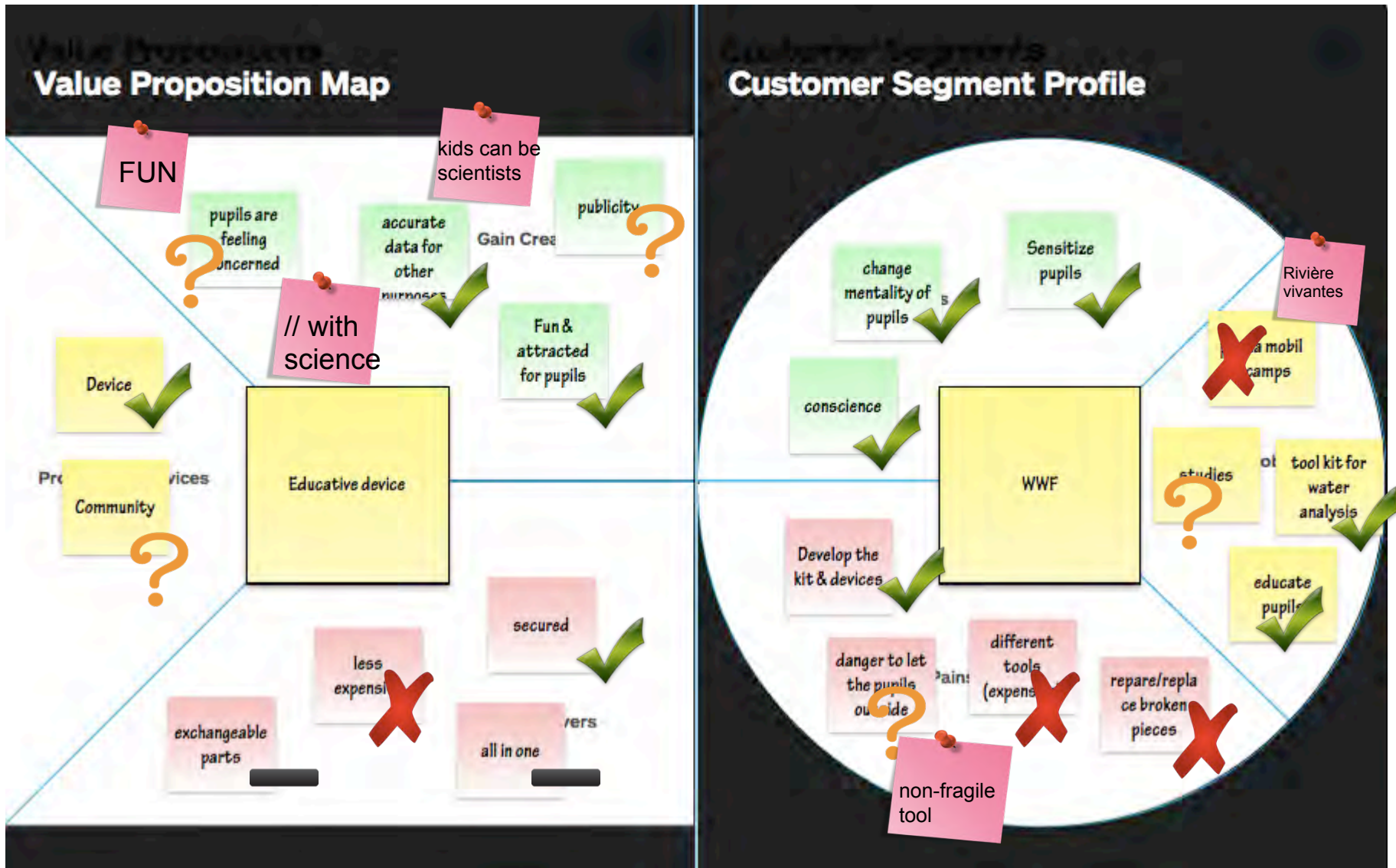
Problem statement: ...

- Sensitize kids with environmental issues
- More and more programs in schools, camps
- Not an easy task to take the pupils outside

Business model canvas



Value proposition Canvas



Validation of interviews: ...

“It’s not a fundamental need, but it would be a real plus for our activity!”

Arianne Derron, Responsable Ecole, WWF

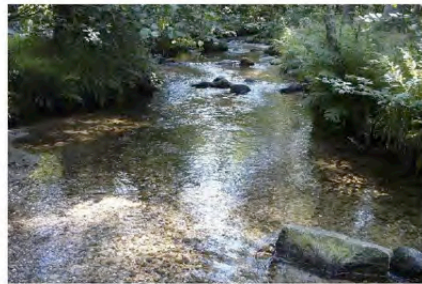
Our next steps

Visit an activity “Rivières vivantes”

Contact “La maison de la Rivière”

Contact schools and teachers

Moodboard - Context



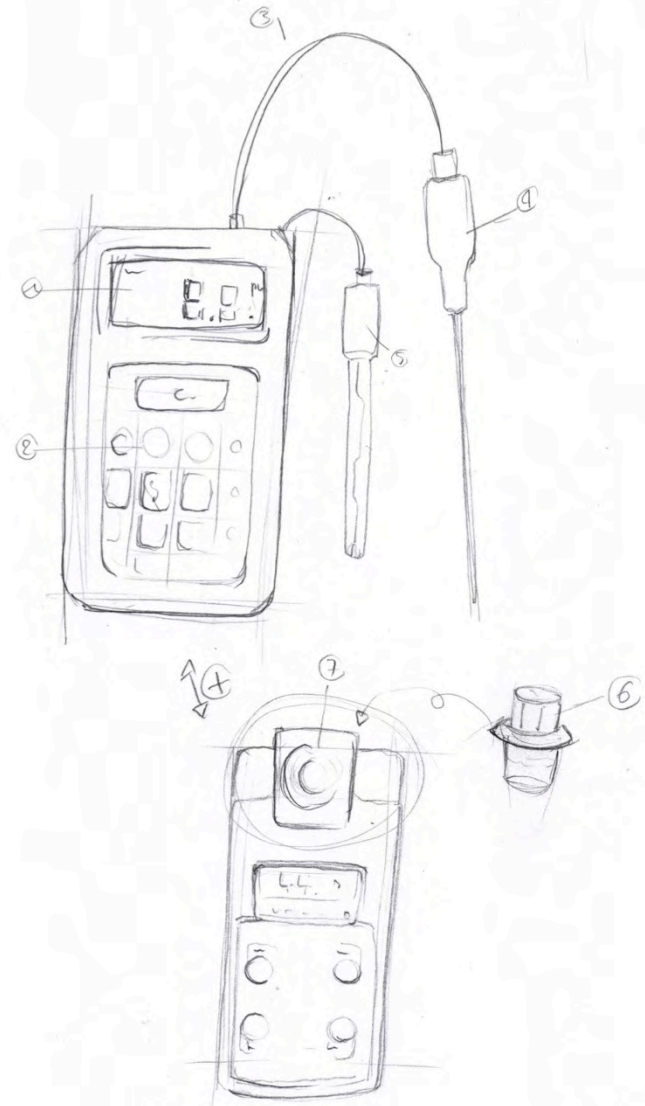
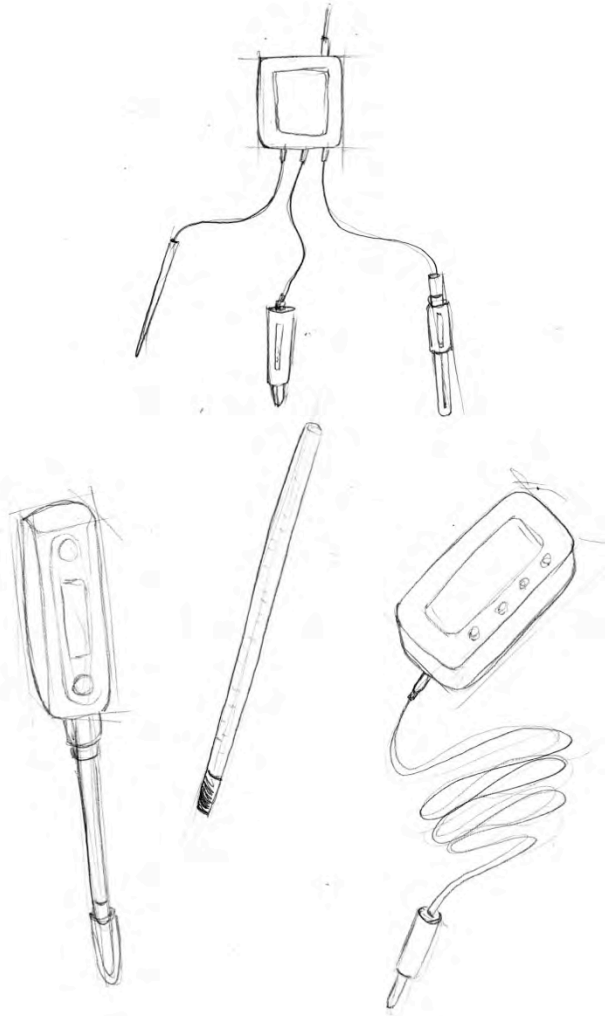
Moodboard - Inspiration



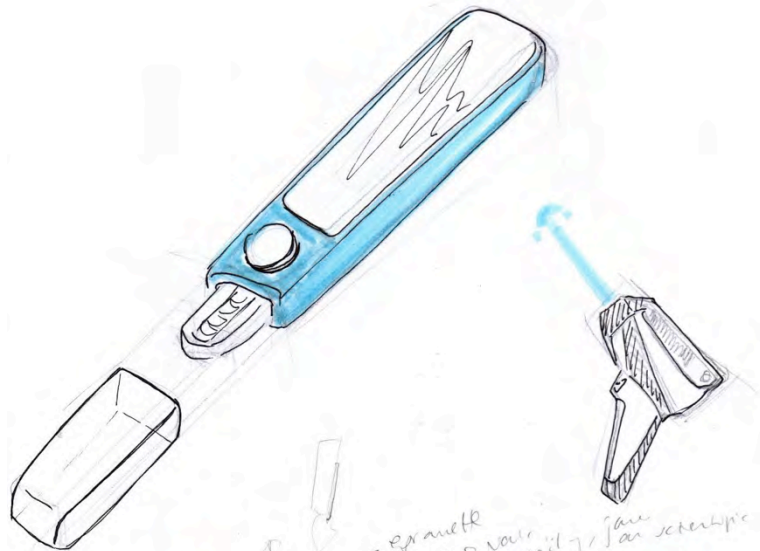
Moodboard - Inspiration



Exploratory sketches



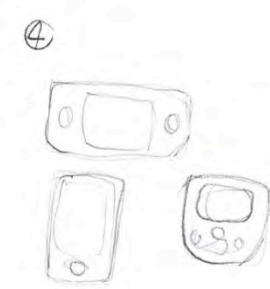
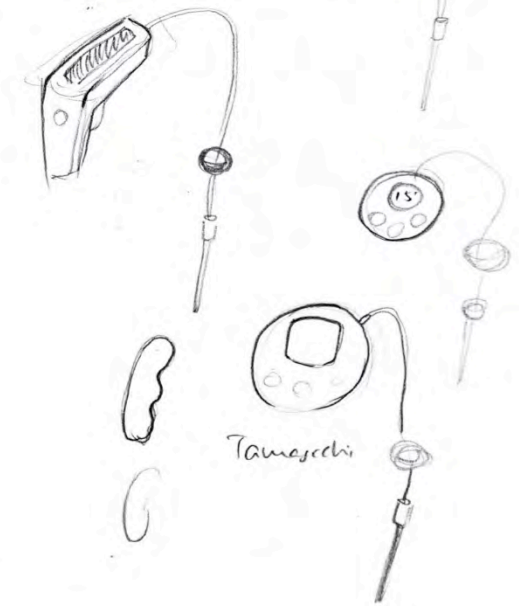
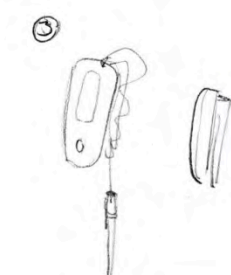
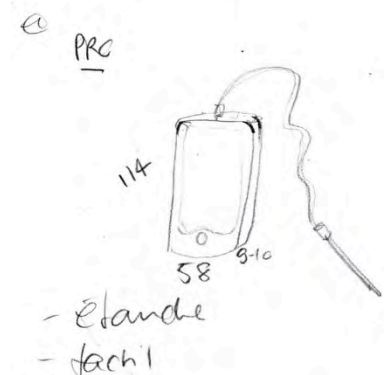
Exploratory sketches



- permette
 di usare
 il pannello per
 la scrittura



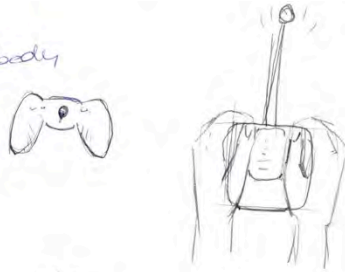
- T
 - AH
 - in grado di



Exploratory sketches

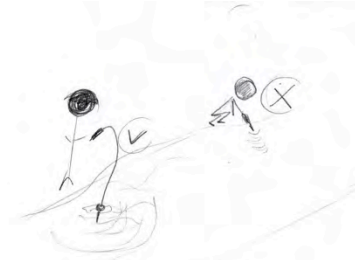
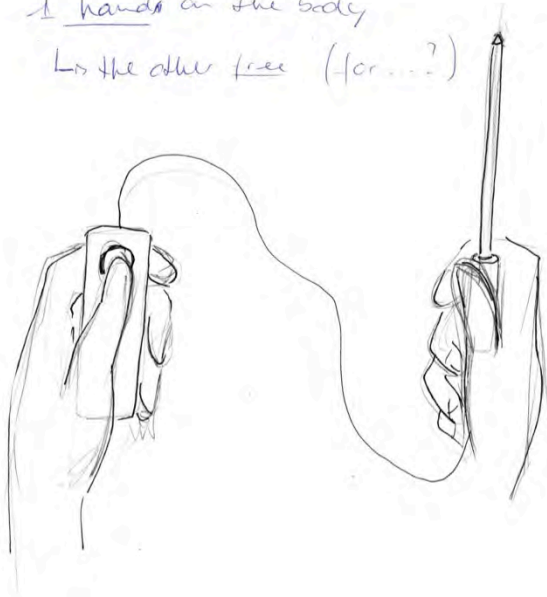
2 HANDS on the body

↳ manche full



1 hands on the body

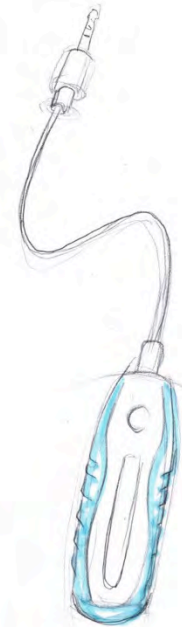
↳ the other free (for...?)



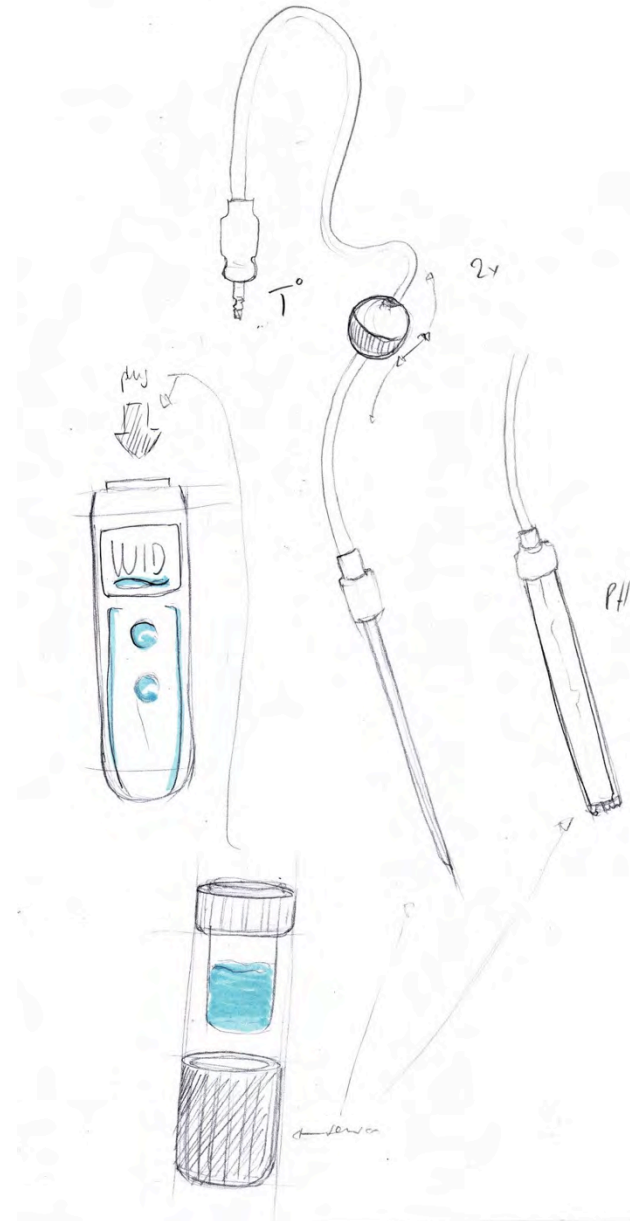
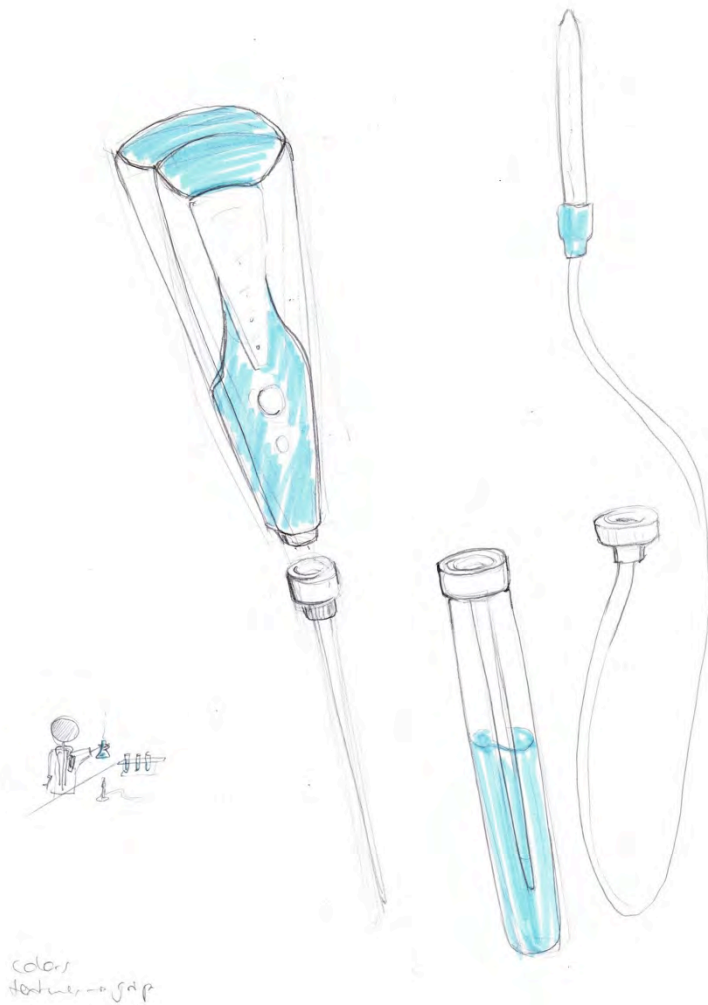
- playful ^{no} like ventral
- little screen (results goes to the smartphone)
- simple to use (= minimize off button)
- signal (light/led/sound?)
- interchangeable
 - ↳ 1 main à la fois
- water proof!
- portable
- kids hand size
- 500 Kil.



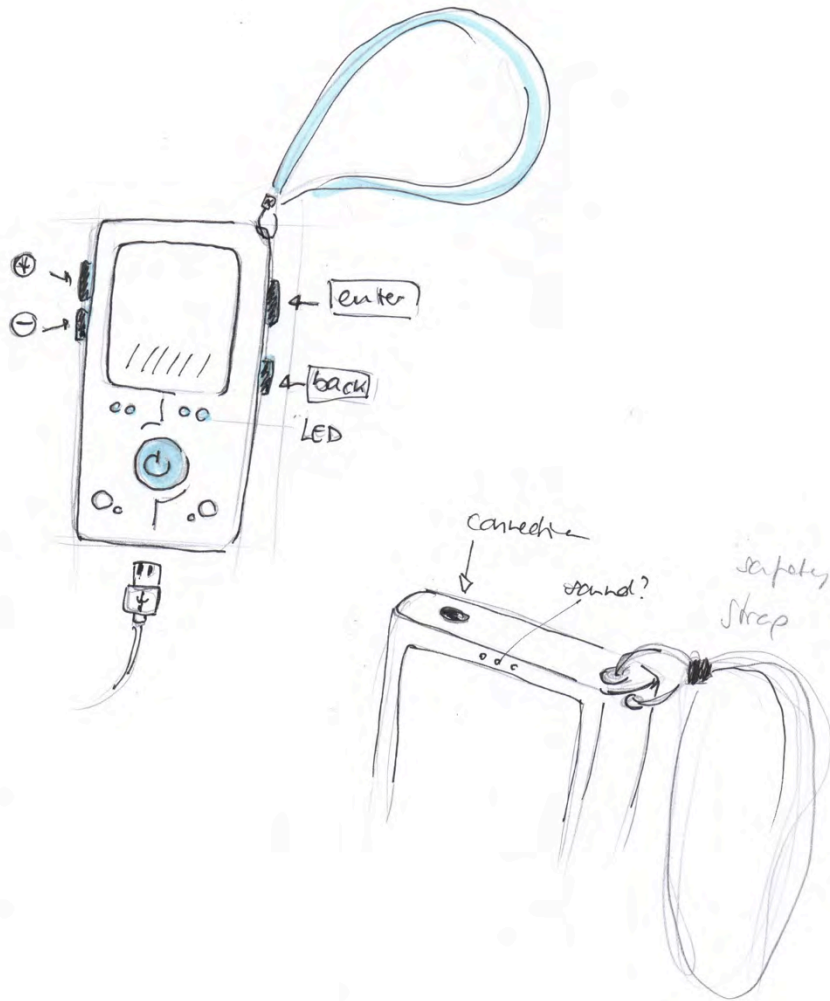
- touch? button?
- ↳ PH = calibration



Exploratory sketches

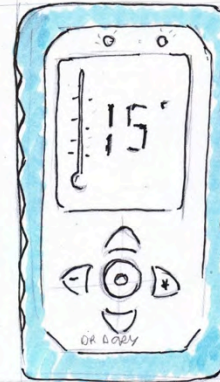


Exploratory sketches

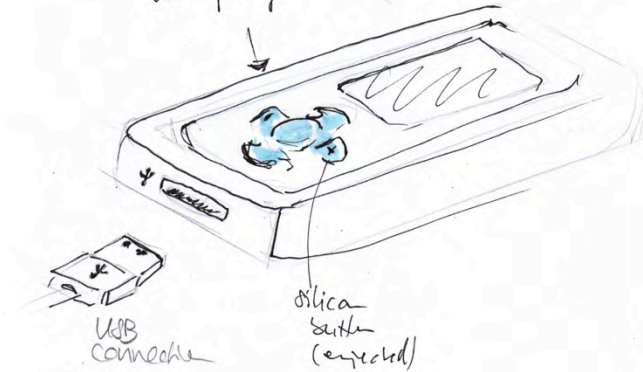


→ outdoor → protection
↳ cage

simple device
without sensor



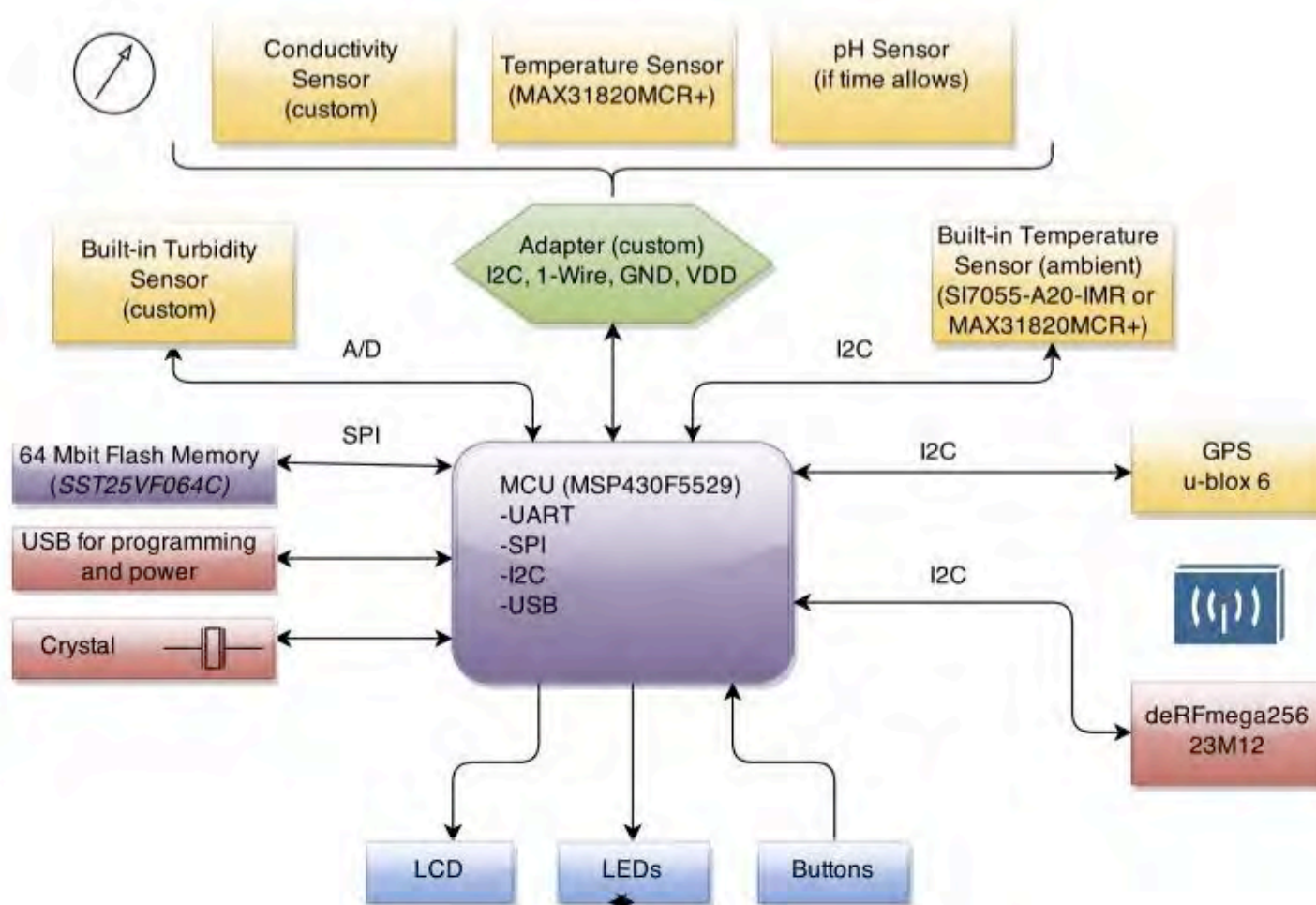
waterproof



Hardware solutions

- Custom conductivity and turbidity sensor.
- Integrated digital temperature sensor (1-wire)
- Microcontroller: TI-MSP430F5529, low power!
evaluation board
- OLED or e-Ink display

Block diagram



Components and electronic modules

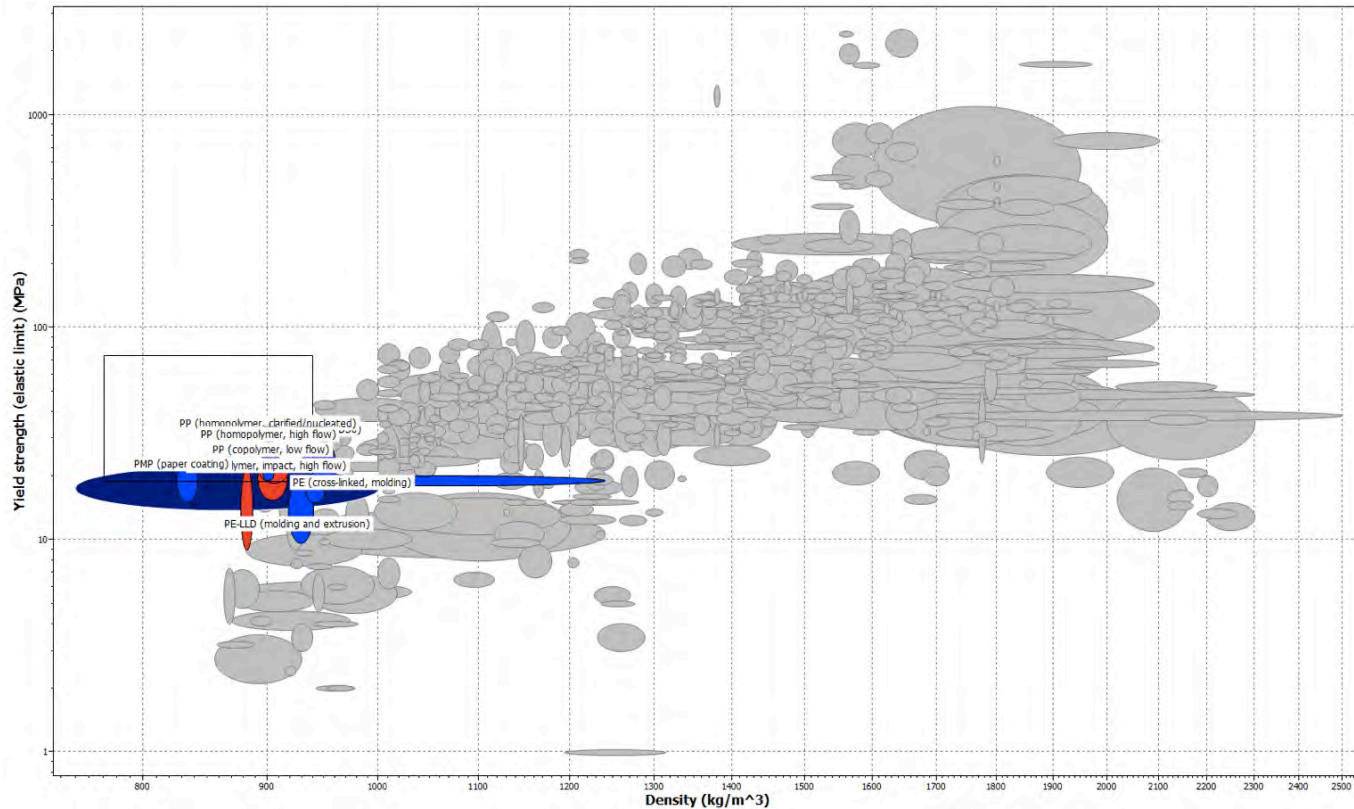
- 6LoWPAN: IoT application, connected sensor network & connection to router. Not sure yet
- u-blox NEO6 (or clone on seeedstudio) for GPS

Software solutions

1. Processing (Energia)
2. FreeRTOS with gcc compiler
3. C++ for computer software
4. (web interface)

Material solutions - Outside body

- Function part: outshell of device
- Constraints: light, strength, water-proof, cheap

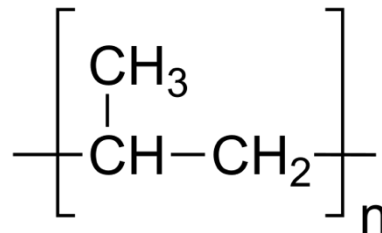


Material solutions - Outside body

-PP(polypropylene), high strength, low density, water durability, easy processing.

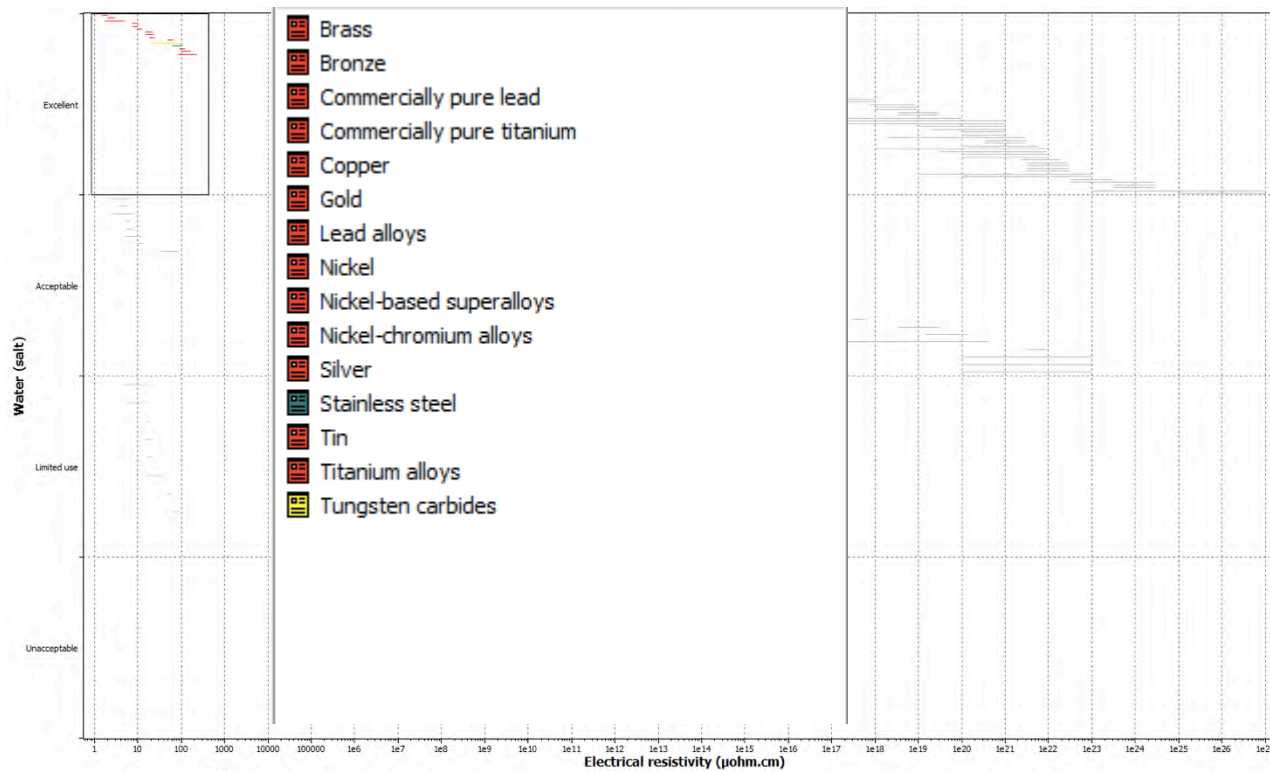
-Used in packaging, toys, containers, food applications, and so on.

- ~2CHF/kg



Material solutions - Conductivity probe

- Function part: probe of conductivity sensor
- Constraints: anticorrosive, high conductive, cheap



Material solutions - Conductivity probe

- Lead is not stiff enough, gold not necessary, Nickel and nickel-based superalloy are too good and expensive.
- Copper coated with anti-corrosion coating. CHEAP
- Stainless steel: working at high temperature—above 200 degree. CHEAP ~5CHF/kg

to be continued...

The process so far...

How do you work together?



What have I learned and where I need help

	Mélanie	Noémie	Raffael	Xiadong	Ziyu
What I learned?				Keep contact with all the lovely guys.	 new things and fun
NEED HELP?			supervisor Altium libs	A solution for the new wireless device.	supervisor manufacturing



Sponsors and partners

